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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,711	02/24/2006	Richard F. Kral	921095102860	7981
23644 7590 02/08/2008 BARNES & THORNBURG LLP P.O. BOX 2786 CHICAGO, IL 60690-2786				
EXAMINER D'ANIELLO, NICHOLAS P				
ART UNIT 1793		PAPER NUMBER		
NOTIFICATION DATE 02/08/2008		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent-ch@btlaw.com

### Office Action Summary

**Application No.**

10/569,711

**Applicant(s)**

KRAL ET AL.

**Examiner**

Nicholas P. D'Aniello

**Art Unit**

4111

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-6 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims are indefinite because they contain improper units of measure, for example in claim 5, "from about 0.1% to about 1.2% carbon" is indefinite because it is not clear whether this is referring to a weight percent or atomic percent. For the purpose of examination these claims are assumed to mean weight percent to be consistent with the specification.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Moller et al. (US Patent No. 4,875,657).

Moller et al. teach a method of repairing a rail head by positioning a mould assembly (15) around a damaged rail head (4) which has a defect (i.e. identifying and

locating a defect in the rail). A gap (12) is provided in the mold below the plug (3) and a pre-calculated amount of molten steel is poured over the rail head to remove the area surrounding the defect and flows into the well (6). After the defect has been removed more molten steel is poured into the mould and allowed to cool. After the steel is cooled the mould is removed and the affected rail head is ground back to the original profile of the undamaged rail head (abstract; column 2, lines 20-52; figure 2). This repair takes place in the head and maintains the continuity of the base and web of the rail.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1, 7 and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valley et al. (US Patent No. 6,515,249) in view of Moller et al. (US Patent No. 4,875,657) and Klumpes (US Patent No. 4,068,111).

Valley et al. teach a method of repairing a rail (1) by first identifying the rail defect (2) (preferably by an ultrasonic rail testing vehicle, 10) and then removing a portion of the defect (2) using a cutting vehicle (15) and then welding the abutting section together to bond the rail (column 3, lines 22-60). Independent claim 1 differs from the reference in calling for filling the void with molten metal and maintaining continuity in the base and a portion of the web. However, it would have been obvious in the art to fill the void with

molten metal and that a defect in the head would only require a portion of the head to be removed (maintaining continuity in the base and a portion of the web) because: a) Klumpes teaches a method of repairing defects in thick metal work-pieces where the only area surrounding the defect is removed and then filled with molten material (column 1, lines 58 to column 2, line 19); and, it is known in the art to repair a defect in the head of a rail where only a portion of the head needs to be removed and then filled with a molten material as exemplified in the teachings of Moller et al. (see numbered paragraph 3 above for details). The incentive for modifying the process of Valley et al. would have simply been to obtain the self-evident advantage of removing only small portion of a rail thereby minimizing the cost of repair by reducing the amount of molten material which would be needed for repairing a defect portion of a rail.

Regarding **claim 7**, although not specifically mentioned by Valley et al., it would have been obvious in the art that solidified weld material should be free of inclusions because inclusions such as air pockets are known to reduce the structural strength of metallic members.

In regard to **claims 10-12**, Valley et al. teaches that the removal of the defect may be done by abrasive saw (grinding), a cutting torch or reciprocating saw (cutting). All of which are a form of machining.

Regarding **claim 13**, as seen in figure 1 of Valley et al. the interface between the rails (33) is a flat surface and the void between (although not drawn to a thickness) would be a 2 dimensional slot shape and includes a lower portion (33 or 34) which forms a weld root.

In regard to **claims 14 and 15**, Valley et al. does not specifically teach a rail where the weld root is bevel shaped or J-shaped, however it would have been obvious in the art to make a weld root with such a shape because Klumpes et al. teaches a making a cavity (4, figure 2) with that would be considered beveled or J-shaped.

6. Claims 2, 3 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valley et al. (US Patent No. 6,515,249), Moller et al. (US Patent No. 4,875,657) and Klumpes (US Patent No. 4,068,111) as applied to claim 1 above, and further in view of Thelen et al. (US Patent No. 6,396,020).

In regard to **claims 2 and 3**, it is unclear whether Valley et al. or Klumpes et al. uses gas shielded arc welding. However, it would have been obvious in the art to use a gas metal arc welding in the process of Valley et al. because Thelen et al. teaches that the weld containment device for welding rails which utilizes for gas-arc welding (column 1, lines 23-26) in order to reduce the repair time as such is a quicker way of creating a molten metal as compared with a conventional technique such as induction heating.

Similarly, in regard to **claims 22 and 23**, as stated in regard to claim 3, Thelen et al. teaches the ability to repair rails using gas metal arc welding (inert gas arc welding).

7. Claims 4-5, 18 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valley et al. (US Patent No. 6,515,249), Thelen et al. (US Patent No. 6,396,020), Moller et al. (US Patent No. 4,875,657) and Klumpes (US Patent No.

4,068,111) as applied to claim 2 or 3 above, and further in view of Irie et al. (US Patent No. 5,704,570).

Valley et al., Klumpes and Thelen et al. teach the method as applied to claims 1 and 3 above. **Claims 4, 5** differ from the references in calling for the weld material to be high carbon electrode with 0.55 - 0.95% carbon. However, it would have been obvious in the art that the welding electrode should be a high carbon alloy because Irie et al. teaches a method of welding high carbon rails where the carbon composition of the rails and the electrode is almost the same in containing between 0.70 and 0.82% weight percent carbon (column 4, lines 27-49).

Regarding **claim 18**, while it is unclear whether Valley et al. or Thelen et al. use a solid weld electrode for gas-arc welding, it would have been obvious in the art that the electrode would be solid because Irie et al. teaches a method of welding rails using a solid high carbon electrode.

In regard to **independent claim 24**, as applied to claim 1, Valley et al. teach a method of repairing a rail (1) by first identifying the rail defect (2) and then removing a portion of the defect (2) using a cutting vehicle (15) and then welding the abutting section together to bond the rail (column 3, lines 22-60) and Thelen et al. teaches a similar method of welding a rail where blocks (310) conform to the profile of the rail (28) for the purpose of containing the molten metal deposited (in the gap) as the weld progresses (column 5, lines 28-36) where the device is suitable for gas-arc welding which is synonymous to gas shielded arc welding with inert gas. This claim differs from the references in calling for a molten weld filler material with high carbon content.

However it would have been obvious in the art that the molten metal would have a carbon content of about 0.2% to 1.0% by weight because Irie et al. teaches a method of welding high carbon rails where the carbon composition of the rails and the electrode is almost the same in containing between 0.70 and 0.82% weight percent carbon (column 4, lines 27-49). Additionally, while Valley et al. does not specifically teach maintaining continuity in the base and a portion of the web of the rail it would have been obvious that a defect in the head would only require a portion of the head to be removed (maintaining continuity in the base and a portion of the web) because Klumpes teaches a method of repairing defects in thick metal work-pieces where the area surrounding the defect is removed and filled with molten material (column 1, lines 58 to column 2, line 19). Moreover, it is known in the art that to repair a defect in the head of a rail only a portion of the head needs to be removed as exemplified in the teachings of Moller et al. as applied to claim 1 in numbered paragraph 3 above.

8. Claims 8, 16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valley et al. (US Patent No. 6,515,249), Moller et al. (US Patent No. 4,875,657) and Klumpes (US Patent No. 4,068,111) as applied to claim 1 above, and further in view of Irie et al. (US Patent No. 5,704,570).

In regard to **claim 8**, Irie et al. teaches that it is important for the weld material to have almost the same carbon content as the base material in order to maintain the fine pearlite structure (column 4, lines 27-49).



Valley et al., Klumpes and Moller et al. teach the method as applied to claim 1 above. **Claims 16 and 21** differ from the references in calling for the weld material to be high carbon electrode with 0.55 - 0.95% carbon. However, it would have been obvious in the art that the welding electrode should be a high carbon alloy because Irie et al. teaches a method of welding high carbon rails where the carbon composition of the rails and the electrode is almost the same in containing between 0.70 and 0.82% weight percent carbon (column 4, lines 27-49).

9. Claim 6 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valley et al. (US Patent No. 6,515,249), Thelen et al. (US Patent No. 6,396,020), Klumpes (US Patent No. 4,068,111), Moller et al. (US Patent No. 4,875,657) and Irie et al. (US Patent No. 5,704,570) as applied to claim 4 or 24 above, and further in view of Sato et al. (US Patent No. 4,803,340).

Valley et al., Thelen et al., Klumpes and Irie et al. teach a method of repairing rails using an electrode with high carbon content. Claims 6 and 25 differ from the references in calling for a welding electrode with a specific composition containing manganese, nickel and silicon. However, it would have been obvious in the art to employ an electrode with such a composition because Sato et al. teach a variety of electrode compositions in Table I. These electrodes (such as No. 11 and 12) include silicon in the content between 0.5 and 1.5%, manganese in the content between 1.0 and 2.5% and nickel in the content of 0.55%. Since about 0.95% of silicon and about 1.8% of manganese recited in this claim are close enough to a composition taught by

Sato et al which includes 1.5% of silicon and 1% of manganese that one skilled in the art would have reasonably expected and appreciated it to have the same desired result/properties. For this reason, the recited composition would have been obvious in the art.

10. Claim 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valley et al. (US Patent No. 6,515,249), Moller et al. (US Patent No. 4,875,657) and Klumpes (US Patent No. 4,068,111) as applied to claim 1 above, and further in view of Morlock (US Patent No. 5,773,779).

Valley et al. , Klumpes et al. and Moller et al. teach the method as applied to claim 1 however fail to specifically teach reducing the heat introduced by the molten metal, therefore minimizing the annealing effect in the heat affected zone. However, it would have been obvious in the art to control the welding operation with parameters that would reduce the heat input and minimize the annealing effect because Morlock teaches a method of welding a rail where the speed is controlled to reduce the amount of heat being put into the weld which aids in maintaining adequate hardness levels (i.e. minimal annealing effect) (column 14, lines 52-60).

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Valley et al. (US Patent No. 6,515,249), Thelen et al. (US Patent No. 6,396,020), Moller et al. (US Patent No. 4,875,657), Klumpes (US Patent No. 4,068,111) and Irie et al. (US Patent

No. 5,704,570) as applied to claim 18 above, and further in view of Caldwell (US Patent No. 4,229,643).

Valley et al., Thelen et al., Klumpes and Irie et al. teach a method of repairing rails using a solid welding electrode. Claim 19 differs from the references because none of the teachings specifically call for treating the electrode to reduce the hydrogen content. However it would have been obvious in the art to keep the hydrogen in the welding electrode to a minimum because Caldwell teaches a welding electrode (with manganese, silicon and nickel) and the importance of holding the hydrogen content to minimum to prevent hydrogen embrittlement (column 11, lines 60-69).

12. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moller et al. (US Patent No. 4,875,657) in view of Irie et al. (US Patent No. 5,704,570).

The following is a quote from the MPEP (Section 2113 – Product-by-Process Claims): "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Moller et al. teach a method of repairing a rail (which has a head, web and base) where a gap is formed by pouring molten material over the rail head to remove the flaw; then additional molten weld material is deposited into the gap and allowed to cool and

solidify. Moller et al. teaches removable mould halves (1 and 2) which conform to the profile of the rail are positioned on the rail surrounding the defect (column 2, lines 20-23). The process of Moller et al. simply removes the portion of the head with defect and maintains the continuity of base and the web. This claim differs from the references in calling for the weld filler material to have a high carbon content which is similar to the carbon content of the rail. However, it would have been obvious in the art to use a weld filler material with high carbon content which is similar to the carbon content of the rail because Irie et al. teaches a method of welding high carbon rails where the carbon composition of the rails and the electrode is almost the same in containing between 0.70 and 0.82% weight percent carbon (column 4, lines 27-49). Although the process of Moller et al. does not positively teach forming a gap by "slotting" the rail head, this limitation fails to distinguish structurally from the rail head of Moller where a gap is formed by pouring molten metal onto a rail head.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas P. D'Aniello whose telephone number is (571)270-3635. The examiner can normally be reached on Monday through Thursday from 8am to 5pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sam Yao can be reached on (571) 272-1224. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NPD  
1/28/2008

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